

## ABSTRACT

An integrated, on-chip thermal management system providing closed-loop temperature control of an IC device and methods of performing thermal management of an IC device. The thermal management system comprises a temperature detection element, a power modulation element, a control element, and a visibility element. The temperature detection element includes a temperature sensor for detecting die temperature. The power modulation element may reduce the power consumption of an IC device by directly lowering the power consumption of the IC device, by limiting the speed at which the IC device executes instructions, by limiting the number of instructions executed by the IC device, or by a combination of these techniques. The control element allows for control over the behavior of the thermal management system, and the visibility element allows external devices to monitor the status of the thermal management system.